

HOUSEHOLD AND NATIONAL FOOD SECURITY IN SOUTHERN AFRICA



Edited by

Godfrey D. Mudimu & Richard H. Bernstein

University of Zimbabwe UZ/MSU Food Research in Southern Africa

HOUSEHOLD AND NATIONAL FOOD SECURITY IN SOUTHERN AFRICA

Edited by
Godfrey Mudimu
Richard H. Bernstein

UZ/MSU Food Security Research in Southern Africa Project
Department of Agricultural Economics and Extension
University of Zimbabwe
P.O. Box MP 167,
Harare, Zimbabwe
Telex 4152 ZW
Telephone 303211 Extension 1516

**HOUSEHOLD STRATEGIES FOR COPING WITH
FOOD INSECURITY IN LOW-RAINFALL AREAS
OF ZIMBABWE**

**T. Matiza, L.M. Zinyama, and
D.J. Campbell**

209

**FARMER MARKETING STRATEGIES TO IMPROVE
FOOD SECURITY**

S. Chigume and J.D. Shaffer

223

**SECTION 6: EXPANDING AGRICULTURAL TRADE IN
THE SADCC REGION**

**EXCHANGE RATE OVERVALUATION AND
AGRICULTURAL PERFORMANCE IN
ZIMBABWE: 1965-1985**

K. Mlambo

243

**AGRICULTURAL PRICING POLICY AND
TRADE IN SEVERAL SADCC COUNTRIES:
PRELIMINARY RESULTS**

D.S. Kingsbury

259

**TRADER PERCEPTIONS OF CONSTRAINTS
TO EXPANDING AGRICULTURAL INPUT
TRADE AMONG SELECTED SADCC
COUNTRIES: PRELIMINARY RESULTS**

J. Rusike

277

SECTION 7: NUTRITION AND FOOD TRANSFERS

**EXPERIENCES IN INCREASING FOOD ACCESS
AND NUTRITION IN ZIMBABWE**

J. Tagwireyi

307

**NUTRITION AND AGRICULTURAL POLICY
ISSUES: CURRENT EVIDENCE AND RESEARCH
AGENDA**

C. Sindwazi

315

ACKNOWLEDGEMENTS

The Fourth Annual Conference on Food Security Research in Southern Africa provided an opportunity for regional researchers, policymakers, government officials, private sector participants, and donor representatives to share research results and experiences in improving food security in Southern Africa. The studies reported in the proceedings are part of a larger cooperative agreement project on food security in Sub-Saharan Africa that is directed by Michael Weber of Michigan State University's Department of Agricultural Economics. The UZ/MSU Food Security Research Programme is being carried out in conjunction with the Department of Agricultural Economics and Extension, University of Zimbabwe.

Many individuals and institutions have contributed to making the conference a success. We extend our gratitude to the authors of the research papers for their intellectual contributions to the debate on improving food security in Southern Africa; and to the policymakers, private sector participants, government officials, and donor representatives for attending the conference and sharing their insights on the critical issues raised.

The Food Security Research Project has benefitted from the generous support of Sam Muchena and John Dhliwayo, of the Ministry of Lands, Agriculture, and Rural Resettlement (Zimbabwe). In their roles as leaders of SADCC's Food Security Administrative and Technical Unit, they have been particularly helpful in planning the annual conference and identifying relevant research themes that complement SADCC's Food Security Programme.

The Food Security Research Project is financed by the U.S. Agency for International Development, Bureau of Science and Technology; Bureau for Africa; and the Southern Africa Regional Programme; under a *Food Security in Africa* cooperative agreement (DAN-1190-A-00-4092-00) with the Department of Agricultural Economics, Michigan State University and Memorandum of Understanding with the Department of Agricultural Economics and Extension, University of Zimbabwe. We are particularly appreciative of the support we have received from USAID officials, including Allison Herrick, Eric Witt, Joshua Mushuari, Doug Pickett, and Brad Wallach of USAID/Zimbabwe; and our Washington-based project managers, Michael Yates (Science and Technology) and Patricia O'Brien (Africa Bureau).

We convey our appreciation to Thembi Sibanda and Murie Hutchison for an excellent job in organizing the Fourth Annual Conference, and to the numerous individuals who helped to make the conference a success: Lovemore Nyabako, Maxwell Chiwashira, Sampson Maguhudze, George Nyamatemba, Ronald Sagwete, Pete Hopkins, and Andrew Barnes.

We are especially indebted to Corinne Smith for her patience, skill, and dedication in word processing the proceedings--and to her husband, Lionel, for his assistance in solving software problems. Their team effort has made this publication possible.

Finally, we thank Chris Wolf and Elizabeth Bartilson for providing software support.

AGRICULTURAL PRICING POLICY AND TRADE IN SEVERAL SADCC COUNTRIES: PRELIMINARY RESULTS

David S. Kingsbury¹

INTRODUCTION²

In recent years, the nine SADCC member states have increasingly voiced an interest in expanded intraregional trade as one strategy towards increased food security within the region. Because six of the nine countries are landlocked, transportation costs to and from European and North American markets are high, and external trade is perceived as risky (especially with South Africa); the desire to pursue such a strategy is understandable.

Levels of official intraregional trade have historically been low. The proportion of recorded intra-SADCC trade in overall official trade is only 4-5% (Chr. Michelsen, 1986). Constraints on expanded intraregional agricultural trade include: food and agricultural pricing policies; shortages and official rationing of foreign exchange; overvalued exchange rates; state monopolies on trading; bureaucratic red-tape; and entrenched trading patterns with former colonial powers.

Intra-SADCC agricultural trade should be considered in the context of macroeconomic and agricultural policies in SADCC nations. Some agricultural marketing and pricing policies are in direct conflict with expanding intraregional trade (price controls, state trading monopolies in staple food commodities, import licensing) because they reduce the incentives to trade by placing restrictions on who can trade, what can be traded at what prices, and when trade is allowed.

This paper focuses on the incentive effects of agricultural pricing and exchange rate policies on intra-SADCC trade in staple food commodities. In the following section, recent intra-SADCC trade patterns in staple food commodities are briefly reviewed. Then, the transportation cost argument for intraregional trade is assessed by examining differences between import and export parity prices for a number of SADCC markets. Import parity prices from various official and parallel market sources are then compared to illustrate the potential incentive effects of agricultural pricing and exchange rate policies on intraregional trade. The paper concludes by advocating the need for more systematic collection of parallel market data as an important input into agricultural policy analysis in SADCC countries.

¹Department of Agricultural Economics, Michigan State University, East Lansing, MI.

²Thanks go to Joseph Rusike, James Shaffer, Michael Weber, and Carl Eicher for their valuable insights. However, the author accepts full responsibility for the views presented.

POTENTIAL AGRICULTURAL PRICING INCENTIVE EFFECTS ON INTRA-SADCC TRADE IN STAPLE FOOD COMMODITIES

Historical intra-SADCC agricultural trade patterns

In a previous paper, a database was constructed on official SADCC trade of three staple food commodities (maize, wheat, and rice) by destination and source for the years 1970 to 1985 (Kingsbury, Stackhouse, and Rusike, 1988). Maize is the most important of the three commodities in terms of official intraregional trade volumes (Table 1). However, only Zimbabwe and Malawi exported maize to other SADCC countries in the first half of the 1980s. In recent years, Mozambique and Tanzania have been the principal regional importers of SADCC maize. Most of these transactions have been funded by donor organizations as food aid.

Only Malawi has consistently exported rice, but quantities have been small—less than 10,000 mt in most years with Zimbabwe and Zambia the primary customers.

While Zimbabwe has occasionally exported small quantities of wheat, no other SADCC country has ever exported wheat. Moreover, the goal of wheat self-sufficiency remains elusive for Zimbabwe.

Modest volumes of sorghum, millet, pulses, and fish have also been traded intraregionally. For example, Zimbabwe has exported sorghum and millet to Botswana, Mozambique, and a few other countries. Here again, however, annual volumes have been small.

Table 1. Intra-SADCC exports of maize and rice, 1970-85 (mt).

Year	Maize						Rice			
	Angola	Malawi	Tanzania	Zambia	Zimbabwe	TOTAL	Angola	Malawi	Tanzania	TOTAL
1970	17,905	0	20,000	1	87,200	125,106	82	474	202	758
1971	10,176	4,652	26,344	100	92,492	133,764	145	1,174	1,083	2,402
1972	0	12,733	0	0	63,327	76,060	0	1,091	360	1,451
1973	0	1,172	0	0	86	1,258	0	10,741	266	11,007
1974	0	19,660	0	69,133	258	89,051	0	8,053	38	8,091
1975	0	15,962	0	0	20,549	36,511	0	5,941	0	5,941
1976	0	0	0	8,809	18,566	27,375	0	2,026	0	2,026
1977	0	0	0	22,139	0	22,139	0	3,231	0	3,231
1978	0	0	37,120	21,903	0	59,023	0	3,285	60	3,345
1979	0	13,350	0	14,400	5,600	33,350	0	6,287	0	6,287
1980	0	0	17	13	0	30	0	12,613	0	12,613
1981	0	0	0	0	107,184	107,184	0	200	0	200
1982	0	49	0	0	303,585	303,634	4,990	2,371	0	7,361
1983	0	76,342	0	0	220,417	296,759	0	197	0	197
1984	0	152,270	0	0	0	152,270	0	0	0	0
1985	0	57,722	0	0	154,317	212,039	0	5	0	5

Source: Kingsbury, Stackhouse, and Rusike (1988).

Transportation costs and intraregional trade

Previous researchers have posited that high overland transportation costs are an important source of competitive advantage for intraregional trade (Koester, 1986)³. To assess the potential transportation cost advantages of intra-SADCC trade, import and export parity prices are calculated and compared.

The import/export parity price represents the opportunity cost of a given country's tradable commodities (Scandizzo and Bruce, 1980). The import parity price is the c.i.f. import price at a country's border, converted using an appropriate exchange rate, and adjusted for transport and handling to a relevant domestic market. If a commodity can be locally produced less expensively than it can be imported, then import substitution may be profitable. The export parity price is the f.o.b. export price, adjusted from a given export market to the appropriate domestic market (or project boundary). If the export parity price is higher than the cost of locally producing a good and transporting it to the relevant domestic market, then that good may be competitive in the export market under consideration.

In the context of assessing intra-SADCC trade potential, examination of import and export parity prices is useful for several reasons. First, the lower the export parity price, the more difficult it will be for a country to profitably export, as high transportation costs outweigh any production cost advantage that the country might enjoy. Second, if import sources are distant, import parity prices will be high because transportation costs make up a large part of the c.i.f. price. This provides greater latitude for import-substituting domestic production. Third the larger the spread between import and export parity prices, the greater the potential to produce locally and export to nearby markets, or alternatively, to import from nearby sources. Large import/export parity price spreads can therefore be used to indicate potential for intraregional trade.

In Table 2, import and export parity prices are calculated using the South African white maize price for 1985-86. The South African white maize price is employed because South Africa has historically been the world's leading exporter, accounting for roughly two-thirds of recorded world exports during the 1975-1983 period (Table 3). Moreover, South Africa has historically dominated the SADCC maize market (Figure 1) with an average market share of 43% over the 1970-1985 period.

For markets relatively close to South Africa (the BLS countries, Zambia, and Zimbabwe), the transportation cost advantage of intra-SADCC trade does not appear to be substantial--as indicated by the relatively low import parity price, high export parity price, and narrow spreads between the two prices. By contrast, the difference between import and export parity prices is still large for a number of SADCC markets. Exporters such as Zimbabwe and Malawi could still expect to have a competitive edge over South Africa in northern SADCC markets. Likewise,

³ According to Koester, another source of trade potential is related to the fact that regional cereals production variability is less than individual country production variability. This indicates that establishment of a regional food reserve could benefit SADCC food security. In addition, different patterns of production, imports, and exports among the SADCC countries may indicate potential for trade expansion.

Table 2. White maize parity prices for selected SADCC markets, 1985-86 (US \$/mt)^a.

Market	Import parity	Export parity	Difference
Gaborone, Botswana	124.50	91.50	33.00
Maseru, Lesotho	127.00	89.00	38.00
Francistown, Botswana	130.50	85.50	45.00
Bulawayo, Zimbabwe	137.50	78.50	59.00
Harare, Zimbabwe	145.50	70.50	75.00
Lusaka, Zambia	164.50	51.50	113.00
Ndola, Zambia	177.50	38.50	139.00
Tete, Mozambique	180.50	35.50	145.00
Blantyre, Malawi	193.50	22.50	171.00
Mbeya, Tanzania	202.00	14.00	188.00
Lilongwe, Malawi	218.50	-2.50	221.00

^a1985-86 South African white maize price is \$108 at Johannesburg (f.a.e.). No overland handling charges have been included.

Sources: For transport, border and port charge data, Louis berger (1986); For the South African price, Maize Board (1986).

Table 3. Estimated world exports of white maize, 1975 to 1983 ('000 mt).

Country	1975	1976	1977	1978	1979	1980	1981	1982	1983
South Africa	1,779	1,142	1,096	1,574	971	700	2,060	2,265	400
Zimbabwe	758	297	420	554	265	86	305	492	251
United States	271	213	49	88	111	323	149	170	111
Kenya	121	113	8	23	120	0	5	45	77
Tanzania	0	0	0	37	16	0	0	0	0
Zambia	17	9	26	61	0	0	0	0	0
El Salvador	0	4	1	1	2	20	10	0	0
Malawi	0	0	0	15	15	0	0	90	100
Total exports	2,946	1,778	1,600	2,353	1,500	1,129	2,529	3,062	939
South Africa as % of total ^a	60.4	64.2	68.5	66.9	64.7	62.0	81.5	74.0	42.6

^aFor the period, South African exports accounted for 67.2% of total world exports.

Source: FAO (1984).

maize surplus regions of southern Tanzania (such as Mbeya) would also enjoy a transportation cost advantage to parts of northern Mozambique, northern Zambia, and perhaps northern Malawi if these areas were in a maize deficit position.

Agricultural pricing policies and parallel markets

To this point, discussion has been limited to official trade flows at observable international prices. Such an approach has several limitations:

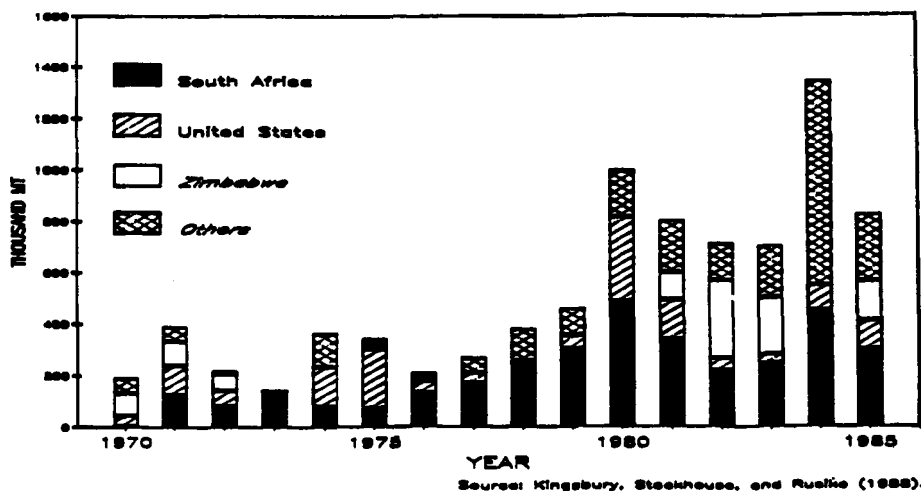


Figure 1. Major maize exporters to SADCC (1970 to 1985).

- o For some SADCC countries, unofficial cross-border trade may be very important--especially for regions that are distant from large urban centers. Zambia's borders with Zaire, Namibia, Malawi, and Tanzania are often mentioned as being particularly porous.⁴
- o From a food security standpoint, official imports may rarely reach isolated provincial centers and villages (Lele and Candler, 1981).
- o Food commodities sold through official channels are usually purchased by marketing boards at fixed producer prices and then sold at fixed wholesale or retail prices. These prices may not accurately reflect the true costs of production, storage, processing, and distribution. This can result in the establishment of parallel markets. In some countries, the domestic parallel market may handle larger volumes than the official market. Therefore, analysis of official flows can give an incomplete picture of the actual structure of trade (Lele and Candler, 1981; Renkow, Leonard, and Franklin, 1983).

It is quite difficult to analyze parallel market activity in Southern Africa because no reliable trade volume data exist. Making matters worse, only two SADCC governments (Tanzania and Malawi) currently collect parallel market price data. As such, it is not possible to provide a comprehensive picture of physical flows and participant behavior for SADCC parallel markets. One must instead begin by

⁴ Zairian and donor officials estimate illegal flows of Zambian maize meal into southern Shaba province at 30,000 to 60,000 mt annually (Ariza-Nino and Mueller, 1988).

identifying markets where flows may exist and then proceed to look in greater detail at those markets for which some data are available.

Location of parallel market activities

As stated in the previous section, the closer two regions are to each other, the greater the transportation cost advantage of trading if one region is a surplus producer while the other region is a deficit producer of a given commodity. To aid in the identification of geographical areas where parallel market activity in agricultural staples may be taking place, Table 4 and Figure 2 show adjacent cereals surplus and deficit zones of SADCC⁵. A total of 17 intracountry and 8 intercountry pairings are identified. Of the 17 intracountry pairings, 8 are rather dubious indicators of current surplus/deficit status. This is because some of the data on which surplus/deficit designations were based are out-of-date. For example, it

Table 4. Adjacent SADCC surplus deficit zones in cereals production.

Surplus zone	Deficit zone(s)
<u>Within individual countries</u>	
Luena	Luanda, Nuambo, Monongue
Francistown	Gaborone, Maun
Lilongwe	Blantyre
Lichinga	Nampula, Tete
Tabora	Arusha
Mbeya	Arusha
Dar es Salaam	Arusha
Morogoro	Arusha
Chipata	Kassama
Lusaka	Ndola, Mongu
<u>Across borders</u>	
Luena	Luanda, Nuambo, Monongue
Francistown	Bulawayo
Rumphi	Kassama
Lilongwe	Tete
Mbeya	Kassama
Chipata	Tete
Lusaka	Bulawayo
Harare	Tete

Source: Technosynthesis (1984) for designations of surplus/deficit zones.

⁵ The zones are roughly homogeneous agroclimatically. Zonal designations are from Technosynthesis (1984).

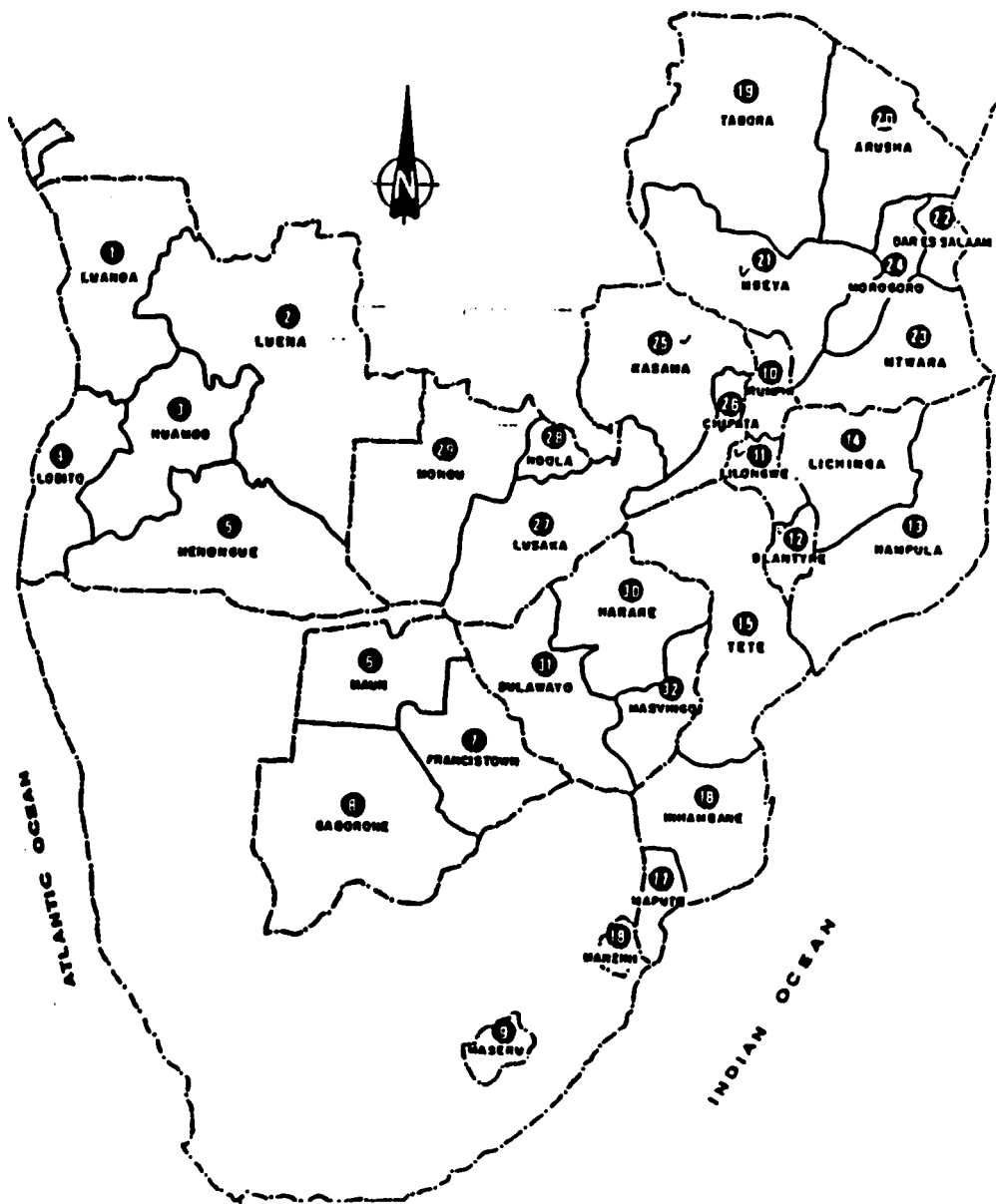


Figure 2. SADCC cereals production zones.

would be hard to believe that any region in Mozambique and Angola is currently in surplus due to war-related disruptions in agricultural production⁶. In addition, the designation of Francistown as a surplus zone is based on data prior to the six-year drought of the 1980s. For similar reasons, two of the eight intercountry pairings are questionable.

Constraints and potentials for expanding trade when parallel markets are considered

Closer examination of one of the intercountry pairings may shed some light on the constraints and potential for expanding intra-SADCC trade when parallel markets are also taken into account. Although Mbeya (southwestern Tanzania) and Kassama (northeastern Zambia) are adjacent, they are dissimilar in a number of ways which could indicate trade potential. While Mbeya typically produces surpluses of maize, rice, millet, sorghum, and beans, Kassama's less favorable soils have made it a historically deficit cereals producer. Leading staples in northern Zambia have traditionally been sorghum, millet, cassava, and rice. However, government subsidies in combination with low official producer prices for traditional crops have encouraged maize production and consumption, despite a comparative disadvantage in maize--relative to more traditional crops and great distances to maize consumption centers such as Lusaka and the Copperbelt (World Bank, 1985). Mbeya and Kassama are also linked by the TAZARA railway and the TANZAM highway so circulation between the two markets may not be as serious a problem as it is for many other regions of SADCC which are located far from national capitals. Moreover, distance from other maize exporting countries such as South Africa and Zimbabwe indicate a potential transportation cost advantage for trade between these two regions.

Table 5 presents the structure of Zambian breakfast and roller meal subsidies in late 1985. Treasury losses per mt were substantial as retail-level consumers paid only about half the costs of milled maize. Because official consumer maize meal prices are pan-seasonal and pan-territorial, this also adds an element of subsidy (which is not quantified here).

In Table 6, import parity prices at Kassama for various official and parallel market sources have been calculated. Among the official sources, Zimbabwe is the least expensive. Zimbabwean maize is less expensive than South African maize because the overland transportation distance is substantially shorter.

Although Tanzanian maize (from Mbeya) enjoys a transportation cost advantage over maize from Zimbabwe (the distance from Mbeya to Kassama is only 300 km while Harare to Kassama is 1,340 km), two factors render Tanzanian maize uncompetitive. First, parastatal handling costs are much higher in Tanzania⁷,

⁶ However, if civil order were restored to Mozambique and Angola, these regions could eventually regain their position as net cereals exporters.

⁷ The Tanzanian agricultural marketing parastatal for maize and a number of other staple commodities is the National Milling Company (NMC). Its counterpart in Zimbabwe is the Grain Marketing Board (GMB).

Table 5. Structure of official Zambian breakfast and roller meal consumer subsidies, December 1985 (kwacha/mt).

	Breakfast meal	Roller meal
Producer price (mt unmilled)	611.00	611.00
NAMBOARD handling	193.00	193.00
Mt of unmilled maize for 1 mt of meal	1.54	1.11
Cost prior to milling for 1 mt of meal	1,238.16	892.44
Miller and retail margin	198.28	143.20
Full cost at retail level	1,436.44	1,035.64
Official retail price (mt)	746.40	575.40
Government profit loss	-690.04	-460.24
Official retail price as % of cost	52.00	55.60

Source: Snell (1987).

constituting over 30% of the free-on-rail (f.o.r.) cost at Mbeya. By contrast, GMB handling costs make up only 12% of the free-on-truck (f.o.t.) Harare cost. More importantly, the Tanzanian shilling was substantially overvalued against the Zambian kwacha in December 1985. If parallel market exchange rates are used as a basis for comparison, the shilling was 167% overvalued against the kwacha whereas the Zimbabwe dollar was 12% undervalued against the kwacha⁸. If officially marketed Tanzanian maize were to be exported at parallel market exchange rates, the import parity price of unmilled maize at Kassama would fall from K2877/mt to K1184/mt, making it much more competitive.

Limitation of parallel market rate

The parallel market rate is not an entirely reliable indicator of the exchange rate that would prevail if exchange rates were market-determined. This is because suppliers and demanders of parallel market currencies require a risk premium, due to the possibility of getting caught and punished by the authorities (Roemer, 1984).

However, the goal here is not to indicate the exact magnitude of overvaluation⁹. Rather, it is to demonstrate that in a region where most currencies are overvalued

⁸ Calculated as follows:

	Official Exchange Rate (OER)	Parallel Exchange Rate (PER)
Shilling per kwacha	2.89	7.71
Zimbabwe dollar per kwacha	0.345	0.303
Percentage over/undervaluation: $(PER/OER - 1) \times 100$. Overvaluation of the shilling relative to the kwacha = 166.8%. Undervaluation of the Zimbabwe dollar relative to the kwacha = 12.2%.		

⁹ For the latter half of 1986, Fletcher (1987) categorized the level of overvaluation of the Tanzanian shilling as high, the Zimbabwe dollar as medium, and the Zambian kwacha as low. The Zambian kwacha depreciated significantly in 1986 during the foreign exchange auction. At the point in time observed by Fletcher, it is therefore likely that the Zimbabwe dollar had become overvalued, relative to the Zambian kwacha.

Table 6. Import parity prices for white maize at Kassama, Zambia from various sources.^a**From various official sources, December 1985:**

	Johannesburg		Harare		Mbeya	
Export price (free-on-rail)	\$US	108.00	Z\$	207.77	TSH	7,702.00
Dry-port charge	\$US	8.00		na		na
Transport to border	\$US	25.40	Z\$	31.50	TSH	171.97
Border charge	\$US	1.00	Z\$	3.30	TSH	16.50
Total	\$US	142.40	Z\$	242.57	TSH	7,890.47
Official exchange rate	K/\$US1	5.70	K/Z\$1	2.90	K/TSH1	0.35
Border price	K	811.68	K	703.45	K	2,761.66
Internal transport	K	237.12	K	192.09	K	31.30
Miller + retail margin	K	128.88	K	128.88	K	128.88
Import parity price	K	1,177.68	K	1,024.42	K	2,921.84
IPP for 1 mt breakfast meal	K	1,813.63	K	1,577.61	K	4,499.64
IPP for 1 mt roller meal	K	1,307.22	K	1,137.11	K	3,243.25

From parallel market sources at Mbeya, Tanzania:

	October 1985		April 1986	
Producer price	TSH	3,860.73	TSH	7,360.38
Handling	TSH	493.00	TSH	493.00
Transport to border (by road)	TSH	343.94	TSH	343.94
Total	TSH	4,697.67	TSH	8,197.32
Parallel exchange rate	K/TSH1	0.10	K/TSH	10.13
Border price	K	469.77	K	1,065.65
Internal transport (by road)	K	71.13	K	71.13
Miller + retail margin	K	128.88	K	128.88
Import parity price	K	669.78	K	1,265.66
IPP for 1 mt breakfast meal	K	1,031.46	K	1,949.12
IPP for 1 mt roller meal	K	743.45	K	1,404.88

^aUnmilled maize is converted to breakfast and roller meal with conversion factors of 1.54 and 1.11 respectively. Transport of Harare maize is by road and rail, Johannesburg maize and official Mbeya maize by rail, while parallel market Mbeya maize is by road. Local currencies are Zambian kwacha (K); Zimbabwe dollar (Z\$); and Tanzanian shilling (TSH).

Sources: Transport, border, and port charges from Louis Berger (1986); Breakfast and roller meal conversion factors and miller and retail margins from Snell (1987); Official exchange rates from IMF (various issues); Parallel exchange rates from Cowitt (1986); Tanzanian official and parallel market prices and handling charges from Marketing Development Bureau (1986); South African export price from Maize Board (1986); Zimbabwe export price from Grain Marketing Board (1987).

to some extent, if the magnitude of overvaluation differs significantly among the currencies, this can seriously inhibit trade as countries with relatively more overvalued currencies price themselves out of regional markets. This occurs regardless of whether payments are made in local or convertible currencies (Koester, 1986).

Unlike official prices, parallel market prices include a seasonal element. The October 1985 producer price at Mbeya is only one-half the April 1986 price. While the April Mbeya price is not competitive with the Zimbabwe price, the October Mbeya import parity price is far lower than any of the other parity prices, even though transport charges are calculated using more expensive road rates. The end result is that government-to-government trade may inhibit informal trade as the seasonal element is subsidized in official trade, either by the source government that pays interest and handling charges for storage to make its exports more competitive, or by the importing government through its pan-seasonal producer and consumer pricing policies.

Impact of consumer subsidies on trade

The high level of subsidies to consumers for staple food commodities such as maize meal is a substantial barrier to intra-SADCC trade. Even the extremely inexpensive October 1985 Mbeya maize can not compete with subsidized Zambian maize meal. However, the magnitude of the subsidy encourages over consumption. Zambia's recent history of maize meal shortages (especially in provinces off the line-of-rail) makes it highly unlikely that the official retail price is the actual market price facing consumers in many parts of the country, except perhaps during the period just after harvest when supplies are most plentiful (Borton and Shoham, 1985).

On the other hand, expanded cross-border trade may occur due to subsidy leakages. Although Zaire is not a member state of SADCC, no discussion of SADCC parallel trade would be complete without discussing the extensive smuggling of Zambian maize meal into the southern Shaba Province of Zaire¹⁰. Maize consumption in Shaba Province is estimated at approximately 470,000 mt annually with local production meeting only about two-thirds of these requirements. The most important Zairian market is Lubumbashi whose 600,000 inhabitants consume roughly, one-half of all maize consumed in Shaba.

As mentioned earlier, Zairian estimates of smuggled Zambian maize meal into Shaba range from 30,000 to 60,000 mt annually. Informal importers generally operate on a small scale, paying lorry owners to transport their bags or alternatively crossing the border by rail with their merchandise. Most consignments are in the 1-2 mt range. At informal depots on the Zairian side of the border, consignments are consolidated for trucking to the major Lubumbashi wholesale market. Despite diseconomies of scale and risks from occasional crackdowns by Zambian officials, informal trade with Shaba is very lucrative (Table 7). While profit margins may not

¹⁰ The following discussion of the Zambia/Zaire maize trade is largely based on Ariza-Nino and Mueller (1988).

provide sufficient inducement for traders to engage in maize meal smuggling into Tanzania, the Zairian margins provide a very powerful incentive to traders.

While such trade can contribute to the food security of recipient country populations, it can hardly be viewed favourably by governments in countries who subsidize the food consumption of neighboring populations. From a political perspective, such smuggling also exacerbates shortages in the subsidizing country which can lead to unrest.

By all accounts, the Zambian maize meal subsidy leakage to Zaire is significant. Using 1985 subsidy figures from Table 5, and assuming that 30,000 mt of maize meal are smuggled annually into Shaba (50% breakfast meal and 50% roller meal), the Zambian maize meal subsidy leakage can be roughly estimated at K17,250,000 or about US\$3 million (at the December 1985 exchange rate of K5.7 = US\$1). The

Table 7. Illustrative profit margins for subsidized Zambian maize meal in two cross-border parallel markets (per mt)^a

From Ndola to Lubumbashi, Zaire (December, 1987).			
Item	Unit	Breakfast meal	Roller meal
Retail price, Ndola	K	750.00	570.00
Parallel exchange rate	Z/K	18.00	8.00
Zaire border price	Z	6,000.00	4,560.00
Internal transport	Z	6,000.00	3,360.00
Import parity price	Z	48,000.00	46,000.00
Profit margin (%)		412.8	480.8
From Kassama to Mbeya, Tanzania (November, 1985):			
		Roller meal	
Retail price, Ndola	K	575.00	
Transport to border	K	71.13	
Total	K	646.53	
Parallel exchange rate	TSH/K1	7.69	
Tanzania border price	TSH	4,971.82	
Internal transport	TSH	343.94	
Import parity price	TSH	5,315.76	
Actual parallel mkt. price	TSH	10,000.00	
Profit margin (%)		88.1	

^aAll transport by road; Local currencies are: Zambian kwacha (K); Zairian Zaire (Z); and Tanzanian shilling (TSH).

Sources: Road transport charges from Louis Berger (1986); Zambian breakfast and roller meal retail prices from Zambian CSO (1988); Parallel exchange rates from Cowitt (1986) and Ariza-Nino and Mueller (1988); Tanzanian parallel market retail maize flour price from Marketing development Bureau (1986). Price is for sembe which is the rough equivalent of roller meal in Tanzania.

current leakage figure may be much higher for two reasons. First, exports may be greater than 30,000 mt. Secondly, the costs of producing, processing, and distributing meal have risen substantially since late 1985, whereas the official nominal retail price in Zambia has remained more or less unchanged. For example, the official preplanting producer price for maize for the upcoming 1988-89 planting season is K1,200/mt, or almost double the nominal 1985-86 producer price. This factor alone greatly widens the gap between the cost price of milled maize and the subsidized consumer price.

Impact of pan-territorial prices

Even if SADCC exchange rates were devalued (or happened to be overvalued at equivalent levels), consumer subsidies were relaxed, official prices were made to more fully take into account the seasonality of supply and demand, and borders were opened to free trade, resulting trade patterns would still not reflect comparative advantage if the policy of pan-territorial pricing was continued. As mentioned earlier, although Zambia's Northern Province is not climatically suited to maize production, pan-territorial pricing and attractive producer prices for maize relative to traditional crops have contributed to making the Northern Province a surplus maize-growing region. Land and labor have been pulled out of sorghum and cassava to produce surpluses for consumption in the distant Copperbelt and Lusaka markets. Because pan-territorial pricing directly implies subsidized transportation, the already over-burdened trucking fleet is further strained. Moreover, trade with nearby cross-border markets is discouraged while trade with far-away domestic urban markets is encouraged.

Impact of price structure on crop production patterns

In a number of SADCC countries, the structure of relative producer prices appears to have discouraged production of traditional drought-resistant crops such as sorghum or crops with high nutritive value such as groundnuts. In Table 8, indices of official producer prices of selected crops relative to maize are presented for several SADCC countries. The structure of relative prices in 1975 serves as the base.

The pricing policies of Zambia, Zimbabwe, and Tanzania have evolved since the 1970s so as to discourage official marketings of sorghum, relative to maize (Jansen, 1982; Jansen, 1986). Zimbabwean and Zambian pricing policies have also discouraged groundnut production while Malawian policy has favored groundnuts. Tanzania appears to have encouraged beans and cassava, relative to maize. However, official producer prices are often not competitive with parallel market prices in Tanzania, so only small volumes pass through official channels (Muir, 1984; Tanzania, 1986).

Impact of biased infrastructural investment

Beyond pricing policy, development of marketing infrastructure and agricultural research policy in most SADCC countries have historically been oriented towards maize and export crops at the expense of drought-resistant crops. While this appears

to be changing in the realm of agricultural research, storage construction, cooperative organization, and rural distribution networks are still largely developed with maize in mind (Lipton, 1986). As a result, the bulk of drought-resistant crop surpluses tend to be marketed through informal channels in a number of SADCC countries.

LIMITATIONS OF THE ANALYSIS

Four caveats are in order in examining the data presented in the previous section:

- o All the import parity prices calculated are "snapshots" and therefore subject to substantial modification over time as interannual and seasonal supply and demand conditions change and exchange rates fluctuate. This detracts somewhat from the robustness of these preliminary findings.
- o Data on parallel market handling costs are unavailable. Instead, the authors used Tanzanian parastatal figures for handling costs, shrinkage, and fumigation. Actual parallel market handling costs could be lower or higher than the figures cited. They would be lower if informal traders were more efficient or offered fewer services than the NMC. On the other hand, procurement, handling, and transportation costs could be higher in the parallel market because informal traders typically deal in small lots. This prevents the achievement of economies of scale.

Table 8. Indices of producer prices for selected crops relative to maize producer prices for four SADCC countries, 1970 to 1986^a.

Year	Zambia		Zimbabwe		Malawi	Tanzania		
	G'nut	Sorghum	G'nut	Sorghum	G'nut	Sorghum	Beans	Cassava
1970	85.71	111.90	na	100.63	100.14	na	na	na
1971	75.00	97.92	64.51	114.83	120.34	na	na	na
1972	69.77	91.09	74.79	143.35	114.92	123.08	na	na
1973	86.18	91.09	62.92	102.39	108.22	161.62	na	187.88
1974	116.28	96.90	70.99	92.25	121.71	117.33	90.67	144.00
1975	100.00	100.00	100.00	10.00	100.00	100.00	100.00	100.00
1976	116.71	79.37	74.14	130.10	106.55	120.00	133.33	125.00
1977	116.71	79.37	78.49	128.47	122.18	125.49	219.61	141.18
1978	123.70	73.53	82.38	126.04	182.49	125.49	219.61	152.94
1979	104.58	55.56	80.73	117.78	143.09	106.67	186.67	130.00
1980	87.98	42.74	62.68	110.03	143.57	106.67	186.67	130.00
1981	93.03	55.56	48.11	85.36	96.02	71.11	124.44	93.33
1982	88.24	46.88	51.80	85.36	142.98	97.52	106.67	102.86
1983	88.40	72.86	55.50	89.07	143.77	96.97	121.21	109.09
1984	85.83	63.44	47.57	89.07	164.58	80.00	106.67	100.00
1985	95.20	79.15	41.11	89.07	177.50	81.27	121.90	114.29
1986	70.24	64.77	61.67	89.07	176.63	na	na	na

^aProducer price of selected crops relative to maize producer price in 1975 serves as base.

Sources: For Zambian prices, Jansen (1986); for Zimbabwean prices, Morris (1987); for Malawian prices, Lele (1988); for Tanzanian prices, Marketing Development Bureau (1986).

- o No attempt has been made to determine the risk premium necessary to induce traders to participate in illegal cross-border trade. This premium can be quite high if borders are heavily policed or large bribes must be paid to officials to facilitate movement of goods. The risk premium may be even higher if informal trade in commodities also involves illegal trade in currencies to facilitate payment. Because currency convertibility is not an issue in parallel in-country trade, the premium for engaging in illegal cross-border trade may be higher than the premium necessary to induce traders to participate in illegal intra-provincial trade.
- o Transportation costs may be much higher than the figures indicate and availability at any price may be a serious constraint for private traders in a number of SADCC countries where trucking fleets have seriously deteriorated due to spare parts shortages.

Consequently, the analysis is admittedly incomplete. In subsequent research, longer time-series data will be obtained on open-market prices, marketing costs, and parallel and official exchange rates to see how conditions have evolved over time. Historical levels of SADCC currency overvaluation will be calculated and an attempt will be made to assess the relative contributions of overvalued exchange rates, marketing costs, and agricultural subsidies to trading incentives.

PRELIMINARY CONCLUSIONS

While evidence exists that there is a basis for intra-SADCC trade in staple food commodities, there are significant policy-related constraints which are impeding the expansion of official trade. Among the most difficult constraints to overcome are overvalued exchange rates which have the potential to greatly impede intraregional trade if SADCC currencies are greatly overvalued with respect to one another. The structure of current food and agricultural pricing policy is another major barrier to increased official trade. The widespread presence of consumer subsidies and pan-seasonal and pan-territorial prices prevent both the private sector and parastatal bodies from engaging in profit-generating trade. Under the present array of price-related policies, it is hard to see how continued government-to-government trade (much of which is underwritten by food aid donors) can lead to greater SADCC food self-reliance. Such trade is not sustainable if source country governments consistently lose money in the form of export subsidies and importing country governments lose money through consumer subsidies.

However, it must be recognized that SADCC governments often have very compelling reasons for maintaining overvalued exchange rates and intervening extensively in food and agricultural markets. Policymakers often view food self-sufficiency, price stability, affordable food for urban wage earners, and maintenance of farm sector income and employment as far more important objectives than the promotion of allocative efficiency through "getting prices right." If, however, the objective of increasing food security-related intraregional trade is important to SADCC governments, expansion of official trade in commodities which are important to food security can not occur on any meaningfully sustainable scale if

governments do not first deal with these much larger issues of macroeconomic and agricultural policy reform.

Although price barriers have the potential to significantly impede increased intra-SADCC trade, "getting prices right" alone will not automatically lead to its expansion. A number of nonprice barriers which result in high transactions costs may also inhibit trade. Among the most serious of these barriers is shortage of foreign exchange and the operation of foreign exchange rationing systems in a number of SADCC countries. Even if the price is "right" for some agricultural commodity or input, government may prohibit its importation in the quantities and at the time desired because other goods are believed to be of higher priority.

This paper provides preliminary evidence that the incentives for engaging in informal intraregional trade may be far greater than for official trade. Informal trading networks may have the potential to serve remote provincial markets more effectively than official networks, thus improving the food security of those populations. However, at present, we know little about how parallel markets operate in SADCC countries. This holds for domestic as well as cross-border markets. Therefore, it is hard to generate any solid conclusions about the relative efficacy of alternative trading networks or which specific policies need encouragement.

As previously mentioned, only two SADCC governments collect open-market price data. However, numerous studies point out that parallel market activity is widespread in SADCC countries, particularly in rural areas not well served by official markets (Renkow *et al.*, 1983; Child, Muir, and Blackie, 1984; Malambo, 1987). For agricultural policy analysis to be more reliable at the national and regional levels, such data needs to be collected by more SADCC governments. Collection of open-market price data for staple food commodities could be an appropriate activity for the SADCC Regional Early Warning System to promote. Collection and timely analysis of open-market price data can also provide useful information to Early Warning System personnel on the potential vulnerability of populations at risk from drought (Borton and Shoham, 1985).

In addition, more work needs to be done on the structure, conduct, and performance of parallel trading networks. The employment effects of these markets may be important contributors to food security. In addition, if the risk premiums involved in trading are found to be quite high, official encouragement of this trade, or at least acceptance, could lead to a reduction of these premiums, resulting in lower food prices to consumers.

REFERENCES

- Ariza-Nino, E. and M. Mueller. 1988. Market prospects for maize from the central Shaba project area. Prepared by Robert R. Nathan Associates, Inc. for the United States Agency for International Development. Washington, D.C. June.
- Borton, J. and J. Shoham. 1985. Risk-mapping and early warning indicators: the Zambian case study. Study Commissioned by the Nutrition Division of the FAO. Rome. February.

- Child, B., K. Muir, and M. Blackie. 1984. *An improved maize marketing system for Zimbabwe*. University of Zimbabwe Department of Land Management, Working Paper 8/84. Harare.
- Chr. Michelsen Institute. 1986. SADCC intraregional trade study, main report. Prepared by the Department of Social Science and Development for SADCC. Bergen, Norway. January.
- Cowitt, P.P. (ed.). 1986. *1985 world currency yearbook*. International Currency Analysis, Inc. Brooklyn, N.Y.
- FAO. 1984. *Structure and characteristics of the world white maize economy*. Committee on Commodity Problems: Intergovernmental Group on Grains, Doc. 84/5. Rome. October.
- Fletcher, L.B. 1987. Contributions and constraints of agricultural price policies to SADCC food security. Report Prepared for the Post-Production Food Industry Advisory Unit of the SADCC Regional Food Security Program. Harare. March.
- Grain Marketing Board. Various years. Computer printouts of the maize accounts. Unpublished, Harare.
- International Monetary Fund. various issues. *International financial statistics*. Washington, D.C.
- Jansen, D. 1986. A comparative study of the political economy of agricultural pricing policies in Zambia. (draft). June.
- Jansen, D.J. 1982. Agricultural prices and subsidies in Zimbabwe: benefits, costs, and trade-offs. Paper prepared for USAID/Harare. May.
- Koester, U. 1986. *Regional cooperation to improve food security in Southern and Eastern African countries*. International Food Policy Research Institute, Research Report 53. Washington, D.C. July.
- Kingsbury, D., L.A. Stackhouse, and J. Rusike. 1988. *Cereals trade patterns in the SADCC region*. Working Paper AEE 3/88. Department of Agricultural Economics and Extension, University of Zimbabwe, Harare. March.
- Lele, U. 1987. Structural adjustment, agricultural development and the poor: some observations on Malawi. Draft. Washington, D.C.
- Lele, U. and W. Candler. 1981. Food security: some East African considerations. In: A. Valdes (ed.). *Food security for developing countries*. Westview Press, Boulder, Colorado.

- Lipton, M. 1986. Intra-trade and food security in Southern Africa: production technology or marketing institutions? Paper presented at an Overseas Development Council Conference on the Political Economy of Southern Africa. Washington, D.C.
- Louis Berger International. 1986. Southern Africa regional transportation strategy evaluator: database update. Report prepared for USAID. Washington, D.C. July.
- Maize Board. Various years. *Report on maize and buckwheat*. Pretoria.
- Malambo, L. M. 1987. Rural food security in Zambia. Unpublished Ph.D dissertation. Department of Agricultural Economics, Michigan State University, East Lansing, MI.
- Morris, M. 1987. Comparative advantage and policy incentives for wheat production. M. Rukuni and R.H. Bernstein (eds.). *Southern Africa: food security policy options*. UZ/MSU Food Security Project, Department of Agricultural Economics and Extension, University of Zimbabwe, Harare.
- Muir-Leresche, K. 1984. Crop price and wage policy in the light of Zimbabwe's development goals. Unpublished D. Phil. thesis. Department of Land Management, University of Zimbabwe, Harare.
- Renkow, M.A., J.B. Leonard, and D.L. Franklin. 1983. The potential effects of alternative structures and pricing policies in the markets for maize in Tanzania. Prepared by Sigma One Corporation. Raleigh, North Carolina.
- Scandizzo, P.L., and C. Bruce. 1980. *Methodologies for measuring agricultural price intervention effects*. World Bank Staff Working Paper No. 394. Washington, D.C.
- Snell, J. 1987. Computer print-out from a Zambian maize meal pricing model. (unpublished). Lusaka.
- Tanzania, Republic of. 1986. *Annual report of maize, rice, and wheat*. Prepared by the Marketing Development Bureau of the Ministry of Agriculture and Livestock Development. Dar es Salaam.
- Technosynthesis. 1984. Regional food reserve. Study commissioned by the EC and prepared for SADCC. Harare.
- World Bank. 1985. *Zambia: agricultural pricing and parastatal performance study*. Washington, D.C.
- Zambia, Republic of. various issues. Consumer price statistics. Prepared by the Central Statistics Office. Lusaka.



This work is licensed under a
Creative Commons
Attribution – NonCommercial - NoDerivs 3.0 License.

To view a copy of the license please see:
<http://creativecommons.org/licenses/by-nc-nd/3.0/>

This is a download from the BLDS Digital Library on OpenDocs
<http://opendocs.ids.ac.uk/opendocs/>